

backward displacement of the uterus. It is also of great value in cases of extensive prolapse of the uterus. It adds materially to our ability to cure some of the very bad cases without subjecting them to operations to produce sterility. The round ligaments are not long enough for vaginal fixation without undue tension, except when the uterus is retro-displaced or much prolapsed. The ligaments should be firmly fixed to the submucous connective tissue by interrupted, buried, fine linen or silk suture at a place in the vaginal wall that will restore and fix the urethrocele, which is almost invariably present, to its normal location. The point of fixation will be further considered later. Advancement of the Anterior Vaginal Wall upon the Uterus: This consists in changing the place of attachment of the vaginal wall to the uterus to a plane higher on the uterus than formerly occupied, as devised by Goffe. The more the vaginal wall is advanced upon the uterus the more certain must be the cure of the bladder and uterine displacements, but because of the possible complication of pregnancy and labor it is not safe to attach the vagina much higher than the anterior reflexion of the peritoneum. Excision of the Vaginal Flaps: Redundant tissue should be excised to an extent consistent with minimum tension upon sutures. The hypertrophied mucosa (skin-like tissue) which is generally present over the base of the urethra should be excised, otherwise it is liable to protrude later. Sutures: Interrupted, buried, fine linen or silk sutures are advocated for the broad ligament, for suture of loops of the round ligaments, and in exceptional cases two or three such sutures may be needed in the connective tissue; otherwise interrupted or continuous Claudius catgut should be used entirely. The part of the wound caused by excision of the hypertrophied mucosa over the base of the urethra should be closed first. The placing of the first "circular" suture is highly important, as it determines the places the urethra will be left in, it closes all or most of the hernial opening of the cystocele, and it should ensure an anterior position of the uterus. It should include the vaginal wall, so that when tied it will restore the urethra to its normal location, which is one of relative fixation. The suture should pass through the anterior surface of the uterus at a place above its point of pivotal action when tipped forward or backward, so that when tied it keeps the body anteriorly. When tied care should be taken not to include a knuckle of the bladder. Succeeding sutures should parallel this one at short distances until the wound is closed.

## PATHOLOGY AND BACTERIOLOGY

UNDER THE CHARGE OF

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**Inquiry into the Presence of Diphtheria and Diphtheroid Organisms in Open Wounds.**—In September, 1917, a report was published by Fitzgerald and Robertson upon the presence of the diphtheria

bacillus in the wounds of returned soldiers. These observations were made in Canada upon soldiers returned from the hospitals in England. The authors found no less than 40 out of 67 cases yielded cultures of *B. diphtherie*. These rather startling findings led to an investigation by ADAMI, BOWMAN and others (*Canadian Med. Assn., Jour.*, 1918, viii, 769) of wounds in the hospitals in England. These authors made a thorough investigation of possible carriers among the patients and hospital personnel. Cultures were made from wounds with a particular attempt of isolating members of the diphtheria and diphtheroid groups. Organisms showing characteristic morphology were tested on differential media and such organisms presenting cultural characteristics of *B. diphtherie* were tested for pathogenicity upon guinea-pigs. Of this study 306 cases were examined. Of these 56 showed the presence of diphtheroid organisms while 2 contained bacteria yielding all the characteristics of the *B. diphtheria*. Two other organisms which showed morphological and cultural characteristics of the bacillus of diphtheria were found to have no pathogenic qualities when tested upon animals. The authors conclude that diphtheroid organisms resembling *B. diphtherie* are present in a certain percentage of wounds. These organisms must be distinguished from the toxin producing bacteria by animal experiment. They indicate that the cultural responses upon the sugar media are in themselves not sufficiently indicative of the true nature of the *B. diphtherie*. The authors are not able to substantiate the claims of Fitzgerald and Robertson on the high incidence of *B. diphtherie* in the wounds. Diphtheroid organisms, on the other hand, were found in almost 20 per cent. of the cases.

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**Bacteriological Examination for Meningococcus Carriers.**—A recent examination of all students and officers in the Kansas State Agricultural College to determine carriers of the meningococcus has led to a description of the technic employed with special emphasis on certain points. BUSHNELL (*Jour. Med. Res.*, 1918, xxxviii, 1) reports excellent results obtained by careful handling of technical methods already in use in most laboratories. By a laboratory force of seven workers, 500 examinations were made daily. Swabs were plated immediately, on a medium consisting of 2 per cent. meat infusion agar to which had been added 1 per cent. peptone, 0.5 per cent. glucose and 5 per cent. defibrinated sheep's blood. These were incubated for twenty-four to forty hours and colonies examined by a slightly modified Gram stain. The author emphasizes the importance of planting cultures immediately to ensure a rapid and abundant growth of the meningococcus. Plates were warmed before using. Another point he emphasizes is the streaking of each swab toward the center of the plate by means of a platinum wire, as the growth of the meningococcus is easily prevented by many other types of microorganisms. The West tube was found to be of little value for this work. It is not only expensive and difficult to make, but it is useless to anyone experienced in taking swabbings from the nasopharynx. There is greater tendency to gag the patient by the use of the tube, and frequently a great deal of mucus obtained in the swabbing is removed on the inside of the tube when the swab is drawn out. Much more accurate results were obtained by rapid implantation on

fresh warm plates. By these improved methods of technic it was found that 2.52 per cent. of the normal population of the community were meningococcus carriers, many of whom were workmen or soldiers from Camp Funston. None of them developed the disease and all were eventually made free from the carrier state.

**Influence of Parathyroidectomy on the Gastro-intestinal Mucosa of Dogs and Rabbits.**—In an earlier series of experiments the author, FRIEDMAN (*Jour. Med. Res.*, 1918, xxxviii, 69) observed the development of intestinal lesions following partial removal of the thyroid. Similar observations have been recorded by Carlson and Jacobson. In the present study the author repeated his experiments in removing a portion of the thyroid from ten rabbits and ten dogs. In addition to this the complete extirpation of the thyroid was performed upon other animals. The author claims that in performing these operations one or more of the parathyroids were left in the majority of animals. The animals were killed from four to one hundred and twenty-four days after operation. At autopsy observations were made respecting the size of the hypophysis, adrenals and remaining lobe of the thyroid. In the gastro-intestinal canal erosions and ulcers were found in the stomach, duodenum and occasionally in the appendix. Gastric or duodenal lesions were found in eleven out of fourteen dogs while the appendix was involved only twice. A very similar percentage was obtained in the rabbits. In his discussion the author associates the gastro-intestinal lesions with the operative procedure, the exact nature of which is difficult to interpret from the author's own description. The nature of the lesions in the gastro-intestinal tract is not described, and although he states that "the picture did not correspond to chronic peptic ulcer in man," he draws conclusions suggesting their identity. The analysis of the experimental work is far from conclusive, particularly in indicating the influence of derangements of the thyroid or parathyroid upon the tissues of the gastro-intestinal canal.

**Researches of Cancerous Diseases in Norway.**—GADE (*Jour. Cancer Res.*, 1918, iii, 107) had at his disposal for study of cancer in Norway the statistics compiled by the Norway Committee for Cancer Research for the years 1908-1912 and the Official Mortality Reports during the years 1902-1911. From these latter a survey of geographical distribution and general frequency of malignant tumors was obtained. While a marked continuous rise in the number of deaths each year from cancer occurs there are several factors which considerably diminish the apparent increase. Thus when the corresponding growth in the population and better diagnosis of the disease have been taken into consideration the real increase does not exceed the ratio of 1 to 1.6. The death-rate of 10.6 per 10,000 (cancer figure) is estimated to be fairly evenly distributed between city and urban population. However, wide variations in the number of cancer deaths exist in different districts, and especially conspicuous is the high rate found in certain densely populated localities. An attempt was made to determine whether a parallelism existed between percentage of cancer deaths and that of aged persons in certain districts (age figure), but although a certain coincidence between low or high age and cancer figures could be noted no

ruling law could be definitely demonstrated. It was noted that in many small towns on the south coast where old sailors resided the cancer mortality was exceedingly high. The relation of cancer to age is similar to that generally found, namely, a gradual increase in frequency through every decennium and reaching an absolute maximum between sixty and seventy years. The figures are very equally distributed between the sexes, when all ages are taken into account, though above thirty-five years a preponderance occurs among males. The most noteworthy feature regarding location in organs is the predominance of gastric carcinoma, which represents 61.2 per cent. of the whole number, with a greater prevalence of the disease in the male sex. The material collected by the Norwegian Cancer Committee is dependent upon voluntary contributions from practitioners, and consists of only 4219 cases. Comparison of this material with the official mortality statistics reveal one striking feature which they possess in common, namely, the predominance of cancer of the stomach. Conspicuous among these cases is also the preponderance of malignant tumors in advanced age. More than one-half the cases reported occur between fifty and seventy years. In 2554 cases a study regarding the distribution of cancer according to occupation was made. Although this number is comparatively small it is interesting to note that the high number (1034) of cases occur in farmers and over 800 cases in factory employees and skilled laborers. Of the cases reported 2706 give information regarding heredity, concerning which the author concludes there is no data to support the supposition of direct transfer from one individual to another. Thus in 304 families, numbering 677 patients, the identical localization occurs in parent and offspring, though in the majority of cases the stomach is the site involved. This, however, may be merely a coincidence, since in 417 families embracing 883 cancerous individuals the localizations were most varying. The author suggests "that some of the cases reported point to a direction of family disposition, possibly in the shape of an inherited tendency toward fatal dislocations in the sense of Cohnheim."

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**Fluctuations in the Growth Energy of Malignant Tumors in Man with Special Reference to Spontaneous Recession.**—Among investigators of transplanted tumors in animals it is a well-recognized fact that retrogressions not infrequently occur. Clinicians have also reported instances of similar recessions of tumor in man, and it has even been estimated that complete retrogressions occur once in every 100,000 cases. These retrogressive changes may vary from a temporary standstill to complete disappearance of the growth; they may be of epithelial or connective-tissue origin and widely distributed in the body, and they may occur at any age or in either sex. Thus far it has not been possible to determine any one specific factor responsible for these variations. Indeed, they apparently are accompanied by the most diverse physiological conditions. With a view to an analysis of this phenomenon of recession in tumor growth from the standpoint of our present knowledge of experimental cancer ROHDENBURG (*Jour. Cancer Res.*, 1918, iii, 193) has gathered from the literature 302 cases of marked recessions or spontaneous cures, which he has divided into three groups, depending upon the efficiency of the diagnosis. Group I consists of those reports

which stand a most rigid scrutiny; group II contains those cases in which some slight question might be raised regarding adequate control of possible diagnostic errors; group III comprises those cases open to more or less grave doubt as to diagnosis. Each group is again subdivided into complete and partial retrogressions. The growths vary widely in type, but malignant epithelial tumors are present in the largest number. The causes of retrogression reported are varied, incomplete operation and heat being about evenly divided. In many cases rise of temperature immediately follows the operation for removal of the mass. The heat may be applied externally or it may be due to an infection such as erysipelas, tuberculosis or pneumonia. A continuous temperature of  $104^{\circ}$  to  $105^{\circ}$  for several days is most effective. Less frequently some profound change in the metabolic processes of the individual, *e. g.*, cachexia or puerperium, is assigned as the cause of the retrogression. In a number of cases simple exploratory laparotomy was sufficient to cause retrogressions, which occasionally resulted in a complete disappearance of the tumor. Why such a procedure should effect a cure remains at present quite inexplicable.

**Examination of Blood Preliminary to the Operation of Blood Transfusion.**—Although there has been a gradual improvement in the technic of the methods used for testing the incompatibility of bloods previous to transfusion even the more recent tests require the withdrawal of a considerable quantity of blood from both patient and donor. The method outlined by Coca (*Jour. Immunol.*, 1918, iii, 93) permits the mutual tests to be made with practically a drop of blood from each individual. Further, only a few glass slides and a blood-mixing pipette, such as is used in making a leukocyte count, is necessary. By the use of the stem of the pipette, which is graduated into ten divisions, a dilution of the blood of both donor and patient can readily be made in the proportions of 9 parts of blood to 1 part of diluent. In order to prevent clotting the pipette is previously rinsed with 10 per cent. sodium citrate, of which a sufficient amount is left in the pipette to fill the lowest division. Blood is then sucked up to the point on the stem marked 1. The two samples of citrated blood are blown out upon glass slides, and from these preliminary dilutions second mixtures of blood in the proportions of 1 to 10 can be made with normal saline by adding to 9 parts of the saline 1 part of the citrated blood. These two procedures give 10 to 1 and 1 to 10 dilutions of both donor and patient's blood, from which the combination requisite for testing for agglutination can be readily made. Thus, three divisions each of citrate blood of donor and patient and three divisions of citrate blood of donor to three divisions of saline blood mixture of patient, and *vice versa*. These are examined microscopically for clumping of corpuscles. In actual practice it is not necessary to make the 1 to 10 dilution of the patient's blood in saline because the corpuscular content of the patient's blood is reduced sufficiently to meet the purpose of dilution. If more than one donor is to be tested the slides must be duplicated or triplicated according to the number of perspective donors. When it is desired to perform the indirect test in which both bloods are examined to ascertain in which one of the four agglutinin groups they belong a similar technic is employed, except that each blood is tested against sera, known to belong to group I and II, for evidence of agglutination.

**Studies on the Antitrypsin of Serum.**—In this work FUGIMOTO (*Jour. Immunol.*, 1918, iii, 51) deals with three aspects of antitryptic activity, namely, its inactivation, the part of the serum in which it is found and the nature of the reaction. His experiments were made throughout with the Bergman method, which he modified by reducing the original concentrations of the reagents. To given amounts of casein are added varying quantities of blood serum and the inactivation is indicated by absence of any precipitation on the addition of acetic acid to the mixture. Serum was employed in the concentration of 1 per cent. to avoid heat coagulation of the serum *per se*. The conclusions reached from his experiments on the effect of heat on antitrypsin confirm in general those of the earlier investigators, namely, that the antitrypsin is thermostable and that the point of inactivation varies slightly in various sera. Heating rabbit and sheep sera for ten minutes at 75° C. causes a complete inactivation, while a temperature of 65° C. for the same time suffices when horse serum is tested. In no case was the author able to obtain any diminution of the antitryptic properties of the serum by shaking. In order to test in what part of the blood the antitrypsin is found, serum was fractioned by several methods in globulin and albumin and the antitryptic activity of each fraction noted. It was demonstrated that the antitryptic action occurs in both fractions, but in a less degree in the albumin, as was previously stated by Döblin and Kammerer. It was further demonstrated that the antitrypsin is not lost from either the globulin or albumin by dialysis and that the ether extract of serum does not contain antitrypsin. An interesting observation deals with the possible identity of antitrypsin and serum albumin. Purified crystallized serum albumin was shown to exert an antitryptic action, but whether the serum albumin alone is responsible for this activity was not demonstrated.

## HYGIENE AND PUBLIC HEALTH

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**Germicidal Action of Freezing Temperatures upon Bacteria.**—HILLARD and DAVIS (*Jour. Bacteriol.*, July, 1918) state that intermittent freezing of bacteria exerts a more effective germicidal action than continuous freezing. The reduction is much less in milk and cream than in pure tap water when freezing temperatures are applied, due, no doubt, to physical protection offered to the bacteria by the colloidal and solid matter in suspension. The degree of cold below freezing is not a very important factor in the destruction of bacteria. There is no critical